

MAPLE PROJECT 2  
Due date October 6, 2006

1. Evaluate each of the following indefinite integrals by using the given substitutions. Then Check to see if Maple can evaluate the integrals directly.

$$(i) \int \frac{\sqrt{1+x}}{(x-1)^{9/2}} dx.$$

$$\text{Hint : Let } x - 1 = \frac{1}{u}$$

**Note:** You will receive extra credit, if integrating without using Maple!. Must show your work.

$$(ii) \int \frac{1}{x(3x^5 + 2)} dx.$$

$$\text{Hint : Rewrite the denominator as } x^6(3 + 2x^{-5}) \text{ and let } u = 3 + 2x^{-5}.$$

2. **The complete elliptic integral of the second kind**

$$E(x) = \int_0^{\frac{\pi}{2}} \sqrt{1 - x \sin^2(t)} dt, \quad 1 \leq x \leq 1$$

Graph  $y = E(x)$  over the interval  $[0, 1]$ , and find the value of  $x$ , to five decimal places of accuracy, for which  $E(x) = 1.5$ .